

GENTIANA PUBERULENTA SP. NOV., A KNOWN
BUT UNNAMED SPECIES OF THE
NORTH AMERICAN PRAIRIES¹

JAMES S. PRINGLE

The species which for the past century has been known as *Gentiana puberula* is one of the showiest of the North American gentians; Curtis (1959) called it "by all odds the most beautiful member of this famed genus in Wisconsin," and described its flowers as "unrivalled in the clarity and intensity of their deep blue color." It is a characteristic species of mesic and xeric prairie communities from Ohio west to Manitoba and Arkansas, and has been collected as far east as western New York and Maryland, as far south as Louisiana, and as far west as the Black Hills of South Dakota. Some authors have designated this species the "Prairie Gentian"; others have used the translation "Downy Gentian", although the puberulence is so minute that it is not a conspicuous feature to the casual observer.

Gentiana puberula Michx. Fl. Bor.-Am. 1:76. 1803 was based on a specimen Michaux had collected at "Fort Cheroquis" (Fort Massac) in present-day Massac County, Illinois, where he had spent part of the autumn of 1795. This specimen is preserved in the herbarium of the Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, Paris, France. A photographic negative of this specimen was made available through the kindness of Prof. A. Aubréville and J. Leandri. This negative and enlarged prints have been placed in HAM. Duplicate prints have been deposited

¹In addition to those persons whose contributions are noted in the text, I should like to express my appreciation to Dr. A. J. Sharp of the University of Tennessee and Dr. J. M. Gillett and Mr. W. J. Cody of the Plant Research Institute, Canada Department of Agriculture, for their reviews of the manuscript, and to Dr. A. H. Moser of the University of Tennessee, for his checking the Latin description.

Contribution No. 5 from the Royal Botanical Gardens, Hamilton, Ontario, Canada.

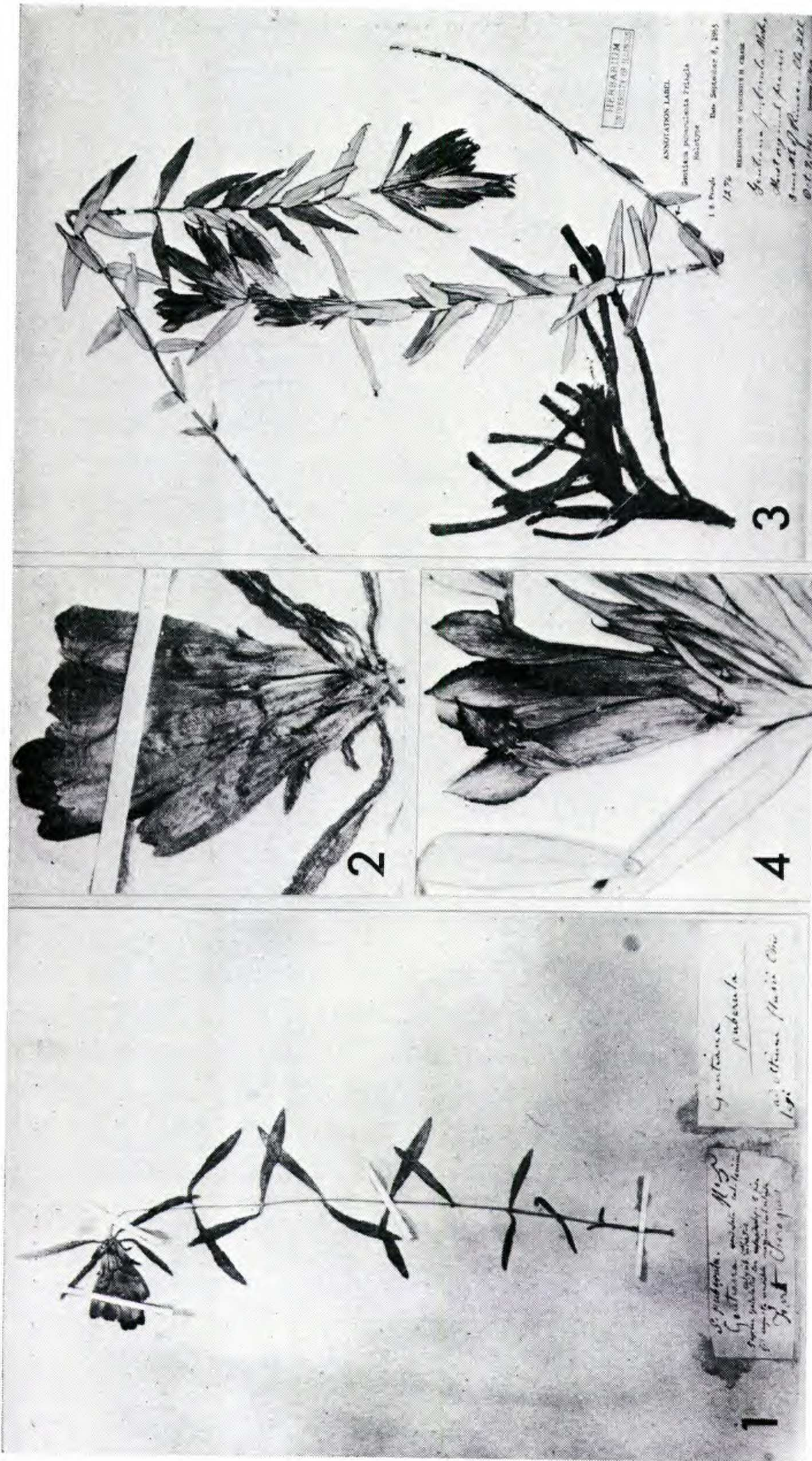


PLATE 1334

FIGS. 1 and 2. Type specimens of *Gentiana puberula* Michx. FIG. 1. Specimen and labels, X ca 0.2. FIG. 2. Flowers, X ca 0.9. FIGS. 3 and 4. Type specimen of *G. puberulenta* Pringle. FIG. 3. Complete specimen on herbarium sheet, with labels, X ca 0.2. FIG. 4. Flower on stem selected for type, X ca 0.9.

in DAO, GH, ILL, and WIS, and are reproduced here as Figures 1 and 2. The status of this specimen as the type is confirmed by the label in Michaux's handwriting on which both the collection data and the description correspond closely to those in Michaux's (1803) *Flora Boreali-Americana*.

The type specimen of *G. puberula* Michx. is clearly not a specimen of the species described under that name in recent manuals (e.g. Fernald, 1950, and Gleason & Cronquist, 1963), but is, instead, a specimen of *G. saponaria* L. which falls well within the range of variation commonly found in populations of that species. *Gentiana saponaria* is usually described as having glabrous stems, but individuals with puberulent stems are occasionally encountered throughout most of its range. Table 1 lists some of the conspicuous differences between the type specimen of *G. puberula* Michx. and the species hitherto commonly known as *G. puberula*, here designated *G. puberulenta*. The characters selected for use in Table 1 are those readily discernible in the photograph and ones which have been found valuable in the distinguishing of *Gentiana* species.

No scientific name appears to be available for the Prairie Gentian. Authors of floras of North America and treatises on the North American gentians published prior to 1848 seem not to have known this species (with the possible exception of Rafinesque, as noted below). Grisebach (1838, 1839, 1845), in his works on the Gentianaceae, tentatively assigned the name *G. puberula* Michx. to the synonymy of his *G. saponaria* β *linearis*. (The latter name was based on *G. linearis* Froel., the name of a distinct species with which Grisebach had confused narrow-leaved specimens of *G. saponaria*.) In so doing, Grisebach was following Pursh (1814), but he (1838) added that this interpretation might be incorrect, and that "it is desirable that this question should be determined by the inspection of Michaux's herbarium." From labels on mid-nineteenth-century collections of the Prairie Gentian, it appears that the first botanists to collect it called it *G. rubricaulis* Schwein. (a name properly applied to a more northern species), and that it is the basis

for the inclusion of "*Gentiana rubricaulis*" (without description) in some plant lists of that period (see Jones and Fuller, 1955).

Although many names for gentians were published by Rafinesque, it does not appear that any can be applied to this species. In certain parts the brief descriptions of *Gentiana shortiana*, *G. torreyana*, *G. rigida*, and *G. gracilis* (all in his Medical Flora, 1828) suggest the possibility that they were based on specimens of this species; however, each of the descriptions, when considered in its entirety, appears much more probably to have been based on *G. saponaria* L. In Rafinesque's (1837) Flora Telluriana these specific epithets appear in his genera *Pneumonanthe* and *Xolemia*; the descriptions of both genera contain material which is inapplicable to the Prairie Gentian, although applicable to *G. saponaria*. Probably Rafinesque never encountered this species, which was rare in the area of his field work and had been collected by few botanists at the time of his publishing. It is highly unlikely that any of these Rafinesque taxa will ever be typified by a specimen, since very few of the plant specimens collected by Rafinesque are extant. Dr. Ronald L. Stuckey, who has studied the herbarium (now in PH) of C. W. Short, to whom Rafinesque gave some specimens, reports that none of the specimens bear any of these names. John Torrey's *Gentiana* specimens (now in NY) were annotated by Rafinesque, but I found none of these names among the annotations.

Probably the earliest published description of the Prairie Gentian is that by Gray (1848) in the first edition of his Manual, in which it was designated *G. saponaria* β *puberula* (Michx.) Torr. & Gray. In later editions Gray recognized this taxon at the rank of species, as *G. puberula* Michx. Gray's treatment has generally been followed by later authors.

Thus, even though a number of descriptions of the Prairie Gentian have been published in the past, it is necessary to describe it here as a new species:

Gentiana puberulenta Pringle, sp. nov.

Herba perennis singulis vel pluribus caulibus suberectis longis 1-6 dm puberulentis subtiliter abundanterque. Folia lanceolato-oblonga interdum paene linearia prope basem latissima uninervia marginibus ciliatis saepe revolutis. Folia superiora longa 1.5-7 (-10.5) cm lata 4-18 (-30) mm. Flores paene sessiles 2-bracteati aggregati apud summum caulem et interdum de axillis pedicellati. Tubus calycis longus 7-18 mm. Lobi calycis lineares longi 4-18 (-25) mm lati 1-3 (-4) mm. Corolla atrocyanea (raro violacea vel rubro-violacea) vasi-formis certe se aperiens longa 3-6 cm. Lobi corollae ovati patentis longi 6-14 mm lati 4-10 mm marginibus saepe erosis. Partes liberae appendicium corollae longae 2.5-6 mm bifidae praeterea segmentibus laciniatis. Antherae non cohaerentes. Semina alata.

Type: *Chase 1276*, 3 mi. N.E. of Princeville, Peoria County, Illinois, 7 Oct. 1906 (ILL; *isotypes* DAO, ILL, KSC, MIN, NY, US).

A more extensive description of this species, along with a discussion of its distribution and probable relationships to other species, will be included in a forthcoming monograph by the author on *Gentiana*, section *Pneumonanthae*, in eastern North America.

No infraspecific taxa have been recognized within this species. The two named hybrids involving it are both typified by specimens, so the applications of the names *G.* × *billingtonii* Farw. (pro sp.) (Pap. Mich. Acad. 1:96. 1923) and *G.* × *curtisii* Pringle (Trans. Wis. Acad. 53: 277. 1964) remain unchanged. Their formulae, however, should be emended to *G. puberulenta* × *G. andrewsii* and *G. puberulenta* × *G. alba*, respectively.

LITERATURE CITED

- CURTIS, J. T. 1959. The Vegetation of Wisconsin: An Ordination of Plant Communities. The Univ. of Wisconsin Press, Madison.
- FERNALD, M. L. 1950. Gray's Manual of Botany. ed 8. American Book Co., New York.
- GLEASON, H. A., and A. CRONQUIST. 1963. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. D. Van Nostrand Co., Princeton.
- GRAY, A. 1848. A Manual of the Botany of the Northern United States . . . James Monroe & Co., Boston.

- GRISEBACH, A. H. R. 1838. Gentianeae Juss. *In* Hooker, W. J., *Flora Boreali-Americana* 2:54-71. Henry G. Bohn, London. [Reprinted 1960 as *Hist. Nat. Class.* 5. H. R. Engelmann (J. Cramer), Weinheim, and Wheldon & Wesley, Codicote.]
- . 1839. *Genera et Species Gentianearum*. J. G. Cotta, Stuttgart and Tubingen.
- . 1845. Gentianaceae. *In* Candolle, A. P. de, and A.L.P.P. de Candolle, *Prodromus Systematis Naturalis Regni Vegetabilis* . . . 9:38-141. Victor Masson, Paris.
- JONES, G. N., and H. J. FULLER. 1955. *Vascular Plants of Illinois*. The Univ. of Illinois Press, Urbana, and The Illinois State Museum, Springfield, Sci. Ser. vol. 6.
- MICHAUX, A. (L. C. M. Richard, ed.) 1803. *Flora Boreali-Americana* . . . Freres Levrault, Paris and Strasburg.
- PURSH, F. T. 1814. *Flora Americae Septentrionalis* . . . White, Cochrane, & Co., London.
- RAFINESQUE, C. S. 1828-1830. *Medical Flora* . . . Atkinson & Alexander, Philadelphia.
- . 1836-1837. *Flora Telluriana*. Publ. by the author, Philadelphia. (Photolith. 1946. Arnold Arboretum, Cambridge.)

ROYAL BOTANICAL GARDENS,
HAMILTON, ONTARIO, CANADA

TABLE 1. THE TYPE SPECIMEN OF *GENTIANA PUBERULA* MICHX.
CONTRASTED WITH *G. PUBERULENTA* PRINGLE

Type specimen of <i>G. puberula</i>	<i>G. puberulenta</i>
Leaves few and widely spaced.	Leaves many and crowded.
Leaves widest at or above the middle.	Leaves widest near the base.
Calyx lobes oblong, widest above the middle.	Calyx lobes linear.
Corolla lobes comprising about 10% of the total corolla length.	Corolla lobes comprising 20-25% of the total corolla length.
Corolla lobes widest at the base, less than twice as long as the appendages.	Corolla lobes ovate, more than twice as long as the appendages.